

REMARKS

Objection to drawings

FIG. 1 has been objected to as not having a legend such as – Prior Art – because only that which is old is illustrated in the figure. Applicant has submitted a corrected drawing sheet inclusive of FIG. 1, with the desired legend, and therefore requests the withdrawal of this objection.

Amendments to pending claims

Independent claim 1 has been amended such that “the lower layer and the upper layer are initially hard mask etched together as a single hard mask layer prior to hard mask trimming of the lower layer.” Independent claim 17 has been amended such that hard mask etching the lower layer and the upper layer is performed with respect to the lower and upper layers “together as a single hard mask layer.” Support for these amendments is found at least first in FIG. 2 and its conjoining description in the patent application as filed, in which the hard mask layer 202 is described as including the lower layer 204 and the upper layer 206. Support for these amendments is also found at least second in FIGs. 3 and 4B and their conjoining description in the patent application as filed, in which the lower layer and the upper layer are hard mask etched together in 304 of FIG. 3, example performance of which is illustrated in FIG. 4B.

Dependent claims 2 and 18 have been amended such that the thin oxide layer “serv[es] as a stop layer during hard mask etching of both the lower layer and the upper layer together as the single hard mask layer.” Support for these amendments is found at least in FIGs. 3 and 4B and their conjoining description in the patent application as filed. The lower layer and the upper layer are hard mask etched together in 304 of FIG. 3, example performance of which is illustrated in FIG. 4B, as has been noted. Further, in the description of FIG. 4B in the patent application as filed, it is recited that “[t]he oxide layer 408 acts as an etch stop, so that etching does not reach the silicon layer 410.”

Claim rejections under 35 USC 103

Claims 1-7 and 17-20 have been rejected under 35 USC 103(a) as being unpatentable over Aminpur (6,482,726). Claims 1 and 17 are independent claims, from which the remaining pending claims ultimately depend. Applicant asserts that claims 1 and 17, as have been amended, are not rendered unpatentable over Aminpur. Because claims 2-7 and 18-20 ultimately depend from claims 1 and 17, they are patentable for at least the same reasons that claims 1 and 17 are patentable. Applicant also asserts that claims 2 and 18, as have been amended, are independently patentable over Aminpur, regardless of the patentability of claims 1 and 17 from which claims 2 and 18 depend.

Patentability of claims 1 and 17

Applicant asserts that claims 1 and 17, as have been amended, are not rendered unpatentable over Aminpur. As has been noted above, claim 1 has been amended such that “the lower layer and the upper layer are initially hard mask etched together as a single hard mask layer prior to hard mask trimming of the lower layer,” whereas claim 17 has been amended such that hard mask etching is performed with respect to the lower and upper layers “together as a single hard mask layer.” Applicant submits that these additional limitations of claims 1 and 17 are not disclosed, taught, or suggested by Aminpur.

Claims 1 and 17 are thus now limited to having the lower and upper layers hard mask etched together as a single hard mask layer, as depicted in the patent application as filed in FIG. 4B as one example. Aminpur, however, does not teach, disclose, or suggest hard mask etching its lower and upper layers together as a single hard mask layer. Aminpur’s upper layer is denoted as the layer 550 in FIG. 5, the layer 650 in FIG. 6, and the layer 750 in FIG. 7, whereas Aminpur’s lower layer is denoted as the layer 540 in FIG. 5, the layer 640 in FIG. 6, and the layer 740 in FIG. 7. Aminpur significantly only hard mask etches the upper layer 550/650/750, as depicted in FIG. 6, and as described in column 6, lines 22-29. The upper layer 550/650/750 and

the lower layer 540/640/740 are never hard mask etched together in Aminpur, only the upper layer 550/650/750 by itself is.

The claimed invention of claims 1 and 17 is thus patentably distinct from the teachings of Aminpur. In the claimed invention, as illustrated in the patent application as filed, the upper layer 404 and the lower layer 406 are hard mask etched together in FIG. 4B, and then thereafter just the lower layer 406 is hard mask trimmed in FIG. 4D. By comparison, in Aminpur, just the upper layer 550/650/750 is hard mask etched in FIG. 6, and then the lower layer 540/640/740 is separately hard mask etched in FIG. 7. The claimed invention therefore includes hard mask etching both the lower and upper layers together as a single hard mask layer, and then hard mask trimming just the lower layer. By comparison, Aminpur first hard mask etches just the upper layer, and then hard mask etches just the lower layer. Therefore, the invention of claims 1 and 17 is not disclosed, taught, or suggested by Aminpur.

Patentability of claims 2 and 18

Applicant asserts that claims 2 and 18, as have been amended, are not rendered unpatentable over Aminpur, regardless of the patentability of their base claims 1 and 17. As has been noted above, claims 2 and 18 have been amended such that the thin oxide layer “serve[s] as a stop layer during hard mask etching of both the lower layer and the upper layer together as the single hard mask layer.” Applicant submits that these additional limitations of claims 2 and 18 are not disclosed, taught, or suggested by Aminpur.

Claims 2 and 18 are thus now limited to having the thin oxide layer serving as a stop layer during hard mask etching of both the lower layer and the upper layer together as a single hard mask layer, as illustratively depicted in the patent application in FIG. 4C. Aminpur, however, does not teach or disclose hard mask etching of both its lower layer 540/640/740 and its upper layer 550/650/750 at the same time. As a result, it would not be obvious to modify Aminpur include an oxide layer that serves as a stop layer during hard mask etching of both the lower and the upper layers, inasmuch as in the first instance Aminpur does not disclose such

dual-layer hard mask etching. That is, it would not be obvious to modify Aminpur to include an oxide layer that serves as a stop layer for a dual-layer hard mask etching process that is not present in Aminpur.

Conclusion

Applicant has made a diligent effort to place the pending claims in condition for allowance, and request that they so be allowed. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Randy Tung, Applicant's Attorney, at 248-540-4040, so that such issues may be resolved as expeditiously as possible. For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to be 'Randy Tung', written over a horizontal line.

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FIG 1

PRIOR ART

1/1

